



Minerals and Metals Sector Update

European Union Workshop on Characterization of Mine Wastes

Dr Bill Price of CANMET Mining and Mineral Sciences Laboratories (MMSL) recently gave five presentations at a two-day workshop on the standards for the characterization of mine wastes, focusing on "acid generation behaviour." The workshop, held in Brussels, Belgium, was organized by the Comité Européen de Normalisation (CEN), the European standardization committee. CEN is responding to the new European Directive on the management of waste from the extractive industries, which requires proper waste characterization as a basis for the development of waste management plans. The purpose of the workshop was to:

- transfer information on international methods for mining waste characterization to European experts, practitioners and regulators;
- provide an overview of presently recommended procedures, standard development, new developments, and practical experiences in material characterization; and
- discuss the suitability of developed methods for the European situation (methodology/scenarios, materials, parameters, testing needs and assessment of testing results).

There is a concern that whatever Europe adopts may be adopted by other parts of the world and there is therefore a need to ensure that what they adopt is practical and effective.

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Technology Transfer: Fly Ash Concrete

Recently, the Concrete Group of CANMET Materials Technology Laboratory (CANMET-MTL) successfully executed the international development/technology transfer project "Implementation of High-Volume Fly Ash Concrete Technology in India" funded by the Canada Climate Change Development Fund (CCCDF) and administered by the Canadian International Development Agency (CIDA). For its noteworthy accomplishments in this project, the Concrete Group will be presented with a departmental merit award.

The project's goals were to strengthen India's ability to reduce greenhouse gas emissions and promote sustainable development through high-volume fly ash concrete (HVFA) technology in India

that was developed by CANMET-MTL. The production of each tonne of portland cement, an essential component of concrete, results in emissions of about one tonne of CO₂. Fly ash, a by-product of coal combustion in thermal power generation that accounts for over 70% of India's power, causes environmental problems. HVFA addresses both these issues by reducing its portland cement content and incorporating increased fly ash content.

The project team, in cooperation with several Indian partner organizations, achieved significant results, including many full-scale HVFA constructions. Currently, the industry and government in India are enthusiastically promoting further use of HVFA technology.

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Engineering Prototype Component Successfully Cast

Dr. Yemi Fasoyinu and Mr. James Thomson successfully completed the casting trial of an engineering prototype component (Bombardier Control Arm) from aluminum alloy B206.0 by low-pressure permanent-mold casting at Grenville Castings Ltd., Smith Falls, Ontario. The casting trial is part of an ongoing project between CANMET Materials Technology Laboratory (CANMET-MTL) and several industrial partners with funding from the U.S. Department of Energy (DOE) on the development of a viable permanent-mold casting technology for hot-tear-susceptible aluminum- and magnesium-base alloys.

Twenty-six castings were poured from aluminum alloy B206.0. Adjustment of the grain refiner level in the molten metal and thermal management of the permanent-mold die contributed to the elimination of the hot-tear cracks observed in the first eight castings. X-ray inspection of selected castings shows that the castings were free of shrinkage porosity and inclusion defects. This is a significant accomplishment because this alloy is usually prone to hot-tear cracks when poured in metal moulds. This result shows that the development of a commercially successful permanent-mold casting process for this alloy can be achieved.

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